Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – SUMMER 2022

Subject Code:3170101 Date:01/06/2022

Subject Name:Aircraft Design

Time:02:30 PM TO 05:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Explain Aircraft Design Procedure.	**03**
	(b)	How will you determine payload for the aircraft conducting long range flight?	**04**
	(c)	Explain procedure for Determination of Fuel Fraction with example.	**07**
Q.2	**(a)**	What is mission profile? Explain with Example.	**03**
	(b)	Explain the following design terms with example:- (1) Cruise & Maximum Speed (2) Payload	**04**
	(c)	Explain different types of aft-tail configurations with figure	**07**
		OR	
	(c)	With the help of diagram briefly explain stages of aircraft conceptual design.	**07**
Q.3	**(a)**	What is structure factor in aircraft design?	**03**
	(b)	Shortly explain Propeller engine integration.	**04**
	(c)	Explain aircraft development process with block diagram	**07**
		OR	
Q.3	**(a)**	Explain method of landing gear arrangement	**03**
	(b)	Define Visual detectability and Aural signature	**04**
	(c)	Discuss effect of wing loading on flight performance	**07**
Q.4	**(a)**	Explain the significance of Aspect ratio	**03**
	(b)	Explain Approximate Group Weight Method	**04**
	(c)	Explain Volume considerations of fuselage.	**07**
		OR	
Q.4	**(a)**	Explain Airfoil selection in ailerons and rudder?	**03**
	(b)	How will you choose airfoil section of a horizontal stabilizer? Please write valid comment with justification	**04**
	(c)	Discuss Structural considerations during design procedure with appropriate figure.	**07**
Q.5	**(a)**	Explain circle – to- square adapter in lofting procedure.	**03**
	(b)	Explain Wetted Area Determination	**04**
	(c)	Explain the significance of different fuselage shapes using neat sketch.	**07**

OR

Q.5	**(a)**	What is the function of winglet?	**03**
	(b)	Explain Fuselage loft verification process briefly	**04**
	(c)	Explain Shock absorbers with figure	**07**

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